SEQUENCE LISTING

<110>   Thiry, Michel
        Dheur, Ingrid

<120>   Piscirickettsia Salmonis Antigens and Use Thereof

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<141>   2006-09-15

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gcg act gcc gca aat gcc gct gat aat ggt aag ctt caa tta caa atc   96
Ala Thr Ala Ala Asn Ala Ala Asp Asn Gly Lys Leu Gln Leu Gln Ile
                20   25   30

aac caa ttg aag gcg caa cac act caa ctt caa cag caa gtt gct aat   144
Asn Gln Leu Lys Ala Gln His Thr Gln Leu Gln Gln Gln Val Ala Asn
            35   40   45

ctg caa ggt caa ggc caa act act ggt gcc gtt cac gtt ggc gct gtt   192
Leu Gln Gly Gln Gly Gln Thr Thr Gly Ala Val His Val Gly Ala Val
        50   55   60

ggt ggt gaa cta atc tct gaa aat aac tac gat ggt cgt ggc tta gat   240
Gly Gly Glu Leu Ile Ser Glu Asn Asn Tyr Asp Gly Arg Gly Leu Asp
65   70   75   80

ctt ctt aaa tca tta gcg aaa gca ggc agc aat gca ccg tta tta act   288
Leu Leu Lys Ser Leu Ala Lys Ala Gly Ser Asn Ala Pro Leu Leu Thr
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att ggt ggt acg tta gaa gct gat gcg caa atg aac cgt aac ggt aat          336
Ile Gly Gly Thr Leu Glu Ala Asp Ala Gln Met Asn Arg Asn Gly Asn
        100                     105                     110

gtt gga tct ggt tct act tct ggt gac cct tct ggc ctt aac tat act          384
Val Gly Ser Gly Ser Thr Ser Gly Asp Pro Ser Gly Leu Asn Tyr Thr
        115                     120                     125

gat gga act agc agt tct gca ttc tat tta gat act gca cgt att gat          432
Asp Gly Thr Ser Ser Ser Ala Phe Tyr Leu Asp Thr Ala Arg Ile Asp
        130                     135                     140

atc tta gcg cat gtg aat gac tgg gtt aac ggt gaa atc tcg tat gac          480
Ile Leu Ala His Val Asn Asp Trp Val Asn Gly Glu Ile Ser Tyr Asp
145                     150                     155                     160

tta aat ggt gat agt ggt ctt cac act ggt agc ctt tta gtg ggt aac          528
Leu Asn Gly Asp Ser Gly Leu His Thr Gly Ser Leu Leu Val Gly Asn
                165                     170                     175

ctc aat caa tta cca gtt tat ggt caa atc ggt aaa ttc tac cca gat          576
Leu Asn Gln Leu Pro Val Tyr Gly Gln Ile Gly Lys Phe Tyr Pro Asp
                180                     185                     190

gca ggt ttg ttt gaa tta gct agt gat gat gtt tat tct tct agc tta          624
Ala Gly Leu Phe Glu Leu Ala Ser Asp Asp Val Tyr Ser Ser Ser Leu
        195                     200                     205

gtc aag cgt tat ttc cgt cca gat gcg caa aat ggt gca tct gta ggc          672
Val Lys Arg Tyr Phe Arg Pro Asp Ala Gln Asn Gly Ala Ser Val Gly
        210                     215                     220

ttc tat aaa gca ggc tta cat act tct tta act gca ttt aaa acg tct          720
Phe Tyr Lys Ala Gly Leu His Thr Ser Leu Thr Ala Phe Lys Thr Ser
225                     230                     235                     240

gct cca caa gct aat gct gct aac tat aac caa gca act agt gat tgg          768
Ala Pro Gln Ala Asn Ala Ala Asn Tyr Asn Gln Ala Thr Ser Asp Trp
                245                     250                     255

tct gca caa gcg gat tac act ttt aat gca ggt caa gtc aat gcc act          816
Ser Ala Gln Ala Asp Tyr Thr Phe Asn Ala Gly Gln Val Asn Ala Thr
        260                     265                     270

ata ggt gca ggt tac tta tct aat atg gtg aat acc aat gac agc ttc          864
Ile Gly Ala Gly Tyr Leu Ser Asn Met Val Asn Thr Asn Asp Ser Phe
        275                     280                     285

act gca aca ggt gca gga act ggt aca caa aaa gat cgg cta ccg atg          912
Thr Ala Thr Gly Ala Gly Thr Gly Thr Gln Lys Asp Arg Leu Pro Met
        290                     295                     300

gct aat gta agc gct aag att ggc ttt ggt cca ttt gaa gcc ctt gct          960
Ala Asn Val Ser Ala Lys Ile Gly Phe Gly Pro Phe Glu Ala Leu Ala
305                     310                     315                     320

act tat gct caa aca tta aaa ggt ttg gcg aat act aca ggt ggt aca         1008
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Thr Tyr Ala Gln Thr Leu Lys Gly Leu Ala Asn Thr Thr Gly Gly Thr
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acg aag ttg aaa gcc ttt gat tta gaa ggt gct tac cac ttc caa gct    1056
Thr Lys Leu Lys Ala Phe Asp Leu Glu Gly Ala Tyr His Phe Gln Ala
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gtg aag ccg atg act gtg atg tta ggt tat agc cgt aca tat ggc ttt    1104
Val Lys Pro Met Thr Val Met Leu Gly Tyr Ser Arg Thr Tyr Gly Phe
            355                 360                 365

gat aag gtt gga cct gtt gat cag ttt att gat ggt aat act gcg att    1152
Asp Lys Val Gly Pro Val Asp Gln Phe Ile Asp Gly Asn Thr Ala Ile
        370                 375                 380

act atc aat aac aaa aaa gac caa tgg tta ttg ggt gta aac tct gaa    1200
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385                 390                 395                 400

gta ttt aag aac aca acg gtt ggt ctt gag tat gcg cgt gta ggt cag    1248
Val Phe Lys Asn Thr Thr Val Gly Leu Glu Tyr Ala Arg Val Gly Gln
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Asn Gln Leu Lys Ala Gln His Thr Gln Leu Gln Gln Gln Val Ala Asn
            35                  40                  45


Leu Gln Gly Gln Gly Gln Thr Thr Gly Ala Val His Val Gly Ala Val
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Gly Gly Glu Leu Ile Ser Glu Asn Asn Tyr Asp Gly Arg Gly Leu Asp
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                100   105   110

Val Gly Ser Gly Ser Thr Ser Gly Asp Pro Ser Gly Leu Asn Tyr Thr
            115   120   125

Asp Gly Thr Ser Ser Ser Ala Phe Tyr Leu Asp Thr Ala Arg Ile Asp
    130   135   140

Ile Leu Ala His Val Asn Asp Trp Val Asn Gly Glu Ile Ser Tyr Asp
145   150   155   160

Leu Asn Gly Asp Ser Gly Leu His Thr Gly Ser Leu Leu Val Gly Asn
                165   170   175

Leu Asn Gln Leu Pro Val Tyr Gly Gln Ile Gly Lys Phe Tyr Pro Asp
                180   185   190

Ala Gly Leu Phe Glu Leu Ala Ser Asp Asp Val Tyr Ser Ser Ser Leu
        195   200   205

Val Lys Arg Tyr Phe Arg Pro Asp Ala Gln Asn Gly Ala Ser Val Gly
    210   215   220

Phe Tyr Lys Ala Gly Leu His Thr Ser Leu Thr Ala Phe Lys Thr Ser
225   230   235   240

Ala Pro Gln Ala Asn Ala Ala Asn Tyr Asn Gln Ala Thr Ser Asp Trp
                245   250   255

Ser Ala Gln Ala Asp Tyr Thr Phe Asn Ala Gly Gln Val Asn Ala Thr
                260   265   270

Ile Gly Ala Gly Tyr Leu Ser Asn Met Val Asn Thr Asn Asp Ser Phe
        275   280   285

Thr Ala Thr Gly Ala Gly Thr Gly Thr Gln Lys Asp Arg Leu Pro Met
    290   295   300

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Ala Asn Val Ser Ala Lys Ile Gly Phe Gly Pro Phe Glu Ala Leu Ala
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Thr Tyr Ala Gln Thr Leu Lys Gly Leu Ala Asn Thr Thr Gly Gly Thr
                325   330   335

Thr Lys Leu Lys Ala Phe Asp Leu Glu Gly Ala Tyr His Phe Gln Ala
            340   345   350

Val Lys Pro Met Thr Val Met Leu Gly Tyr Ser Arg Thr Tyr Gly Phe
        355   360   365

Asp Lys Val Gly Pro Val Asp Gln Phe Ile Asp Gly Asn Thr Ala Ile
    370   375   380

Thr Ile Asn Asn Lys Lys Asp Gln Trp Leu Leu Gly Val Asn Ser Glu
385   390   395   400

Val Phe Lys Asn Thr Thr Val Gly Leu Glu Tyr Ala Arg Val Gly Gln
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Leu Asp Ser Thr Gly Thr Asp Thr Asn Arg Tyr Asn Val Leu Thr Ala
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1   5   10   15

cac act caa ctt caa cag caa gtt gct aat ctg caa ggt caa ggc caa   96
His Thr Gln Leu Gln Gln Gln Val Ala Asn Leu Gln Gly Gln Gly Gln
                20   25   30

act act ggt gcc gtt cac gtt ggc gct gtt ggt ggt gaa cta atc tct   144

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Thr Thr Gly Ala Val His Val Gly Ala Val Gly Gly Glu Leu Ile Ser
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gaa aat aac tac gat ggt cgt ggc tta gat ctt ctt aaa tca tta gcg        192
Glu Asn Asn Tyr Asp Gly Arg Gly Leu Asp Leu Leu Lys Ser Leu Ala
    50                  55                  60

aaa gca ggc agc aat gca ccg tta tta act att ggt ggt acg tta gaa        240
Lys Ala Gly Ser Asn Ala Pro Leu Leu Thr Ile Gly Gly Thr Leu Glu
65                  70                  75                  80

gct gat gcg caa atg aac cgt aac ggt aat gtt gga tct ggt tct act        288
Ala Asp Ala Gln Met Asn Arg Asn Gly Asn Val Gly Ser Gly Ser Thr
                85                  90                  95

tct ggt gac cct tct ggc ctt aac tat act gat gga act agc agt tct        336
Ser Gly Asp Pro Ser Gly Leu Asn Tyr Thr Asp Gly Thr Ser Ser Ser
                100                 105                 110

gca ttc tat tta gat act gca cgt att gat atc tta gcg cat gtg aat        384
Ala Phe Tyr Leu Asp Thr Ala Arg Ile Asp Ile Leu Ala His Val Asn
                115                 120                 125

gac tgg gtt aac ggt gaa atc tcg tat gac tta aat ggt gat agt ggt        432
Asp Trp Val Asn Gly Glu Ile Ser Tyr Asp Leu Asn Gly Asp Ser Gly
    130                 135                 140

ctt cac act ggt agc ctt tta gtg ggt aac ctc aat caa tta cca gtt        480
Leu His Thr Gly Ser Leu Leu Val Gly Asn Leu Asn Gln Leu Pro Val
145                 150                 155                 160

tat ggt caa atc ggt aaa ttc tac cca gat gca ggt ttg ttt gaa tta        528
Tyr Gly Gln Ile Gly Lys Phe Tyr Pro Asp Ala Gly Leu Phe Glu Leu
                    165                 170                 175

gct agt gat gat gtt tat tct tct agc tta gtc aag cgt tat ttc cgt        576
Ala Ser Asp Asp Val Tyr Ser Ser Ser Leu Val Lys Arg Tyr Phe Arg
                180                 185                 190

cca gat gcg caa aat ggt gca tct gta ggc ttc tat aaa gca ggc tta        624
Pro Asp Ala Gln Asn Gly Ala Ser Val Gly Phe Tyr Lys Ala Gly Leu
                195                 200                 205

cat act tct tta act gca ttt aaa acg tct gct cca caa gct aat gct        672
His Thr Ser Leu Thr Ala Phe Lys Thr Ser Ala Pro Gln Ala Asn Ala
    210                 215                 220

gct aac tat aac caa gca act agt gat tgg tct gca caa gcg gat tac        720
Ala Asn Tyr Asn Gln Ala Thr Ser Asp Trp Ser Ala Gln Ala Asp Tyr
225                 230                 235                 240

act ttt aat gca ggt caa gtc aat gcc act ata ggt gca ggt tac tta        768
Thr Phe Asn Ala Gly Gln Val Asn Ala Thr Ile Gly Ala Gly Tyr Leu
                245                 250                 255

tct aat atg gtg aat acc aat gac agc ttc act gca aca ggt gca gga        816
Ser Asn Met Val Asn Thr Asn Asp Ser Phe Thr Ala Thr Gly Ala Gly
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6

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act ggt aca caa aaa gat cgg cta ccg atg gct aat gta agc gct aag    864
Thr Gly Thr Gln Lys Asp Arg Leu Pro Met Ala Asn Val Ser Ala Lys
        275                 280                 285

att ggc ttt ggt cca ttt gaa gcc ctt gct act tat gct caa aca tta    912
Ile Gly Phe Gly Pro Phe Glu Ala Leu Ala Thr Tyr Ala Gln Thr Leu
        290                 295                 300

aaa ggt ttg gcg aat act aca ggt ggt aca acg aag ttg aaa gcc ttt    960
Lys Gly Leu Ala Asn Thr Thr Gly Gly Thr Thr Lys Leu Lys Ala Phe
305                 310                 315                 320

gat tta gaa ggt gct tac cac ttc caa gct gtg aag ccg atg act gtg   1008
Asp Leu Glu Gly Ala Tyr His Phe Gln Ala Val Lys Pro Met Thr Val
                325                 330                 335

atg tta ggt tat agc cgt aca tat ggc ttt gat aag gtt gga cct gtt   1056
Met Leu Gly Tyr Ser Arg Thr Tyr Gly Phe Asp Lys Val Gly Pro Val
                340                 345                 350

gat cag ttt att gat ggt aat act gcg att act atc aat aac aaa aaa   1104
Asp Gln Phe Ile Asp Gly Asn Thr Ala Ile Thr Ile Asn Asn Lys Lys
        355                 360                 365

gac caa tgg tta ttg ggt gta aac tct gaa gta ttt aag aac aca acg   1152
Asp Gln Trp Leu Leu Gly Val Asn Ser Glu Val Phe Lys Asn Thr Thr
        370                 375                 380

gtt ggt ctt gag tat gcg cgt gta ggt cag ctt gat agc aca ggt act   1200
Val Gly Leu Glu Tyr Ala Arg Val Gly Gln Leu Asp Ser Thr Gly Thr
385                 390                 395                 400

gac act aac cgc tac aac gta ttg act gcg gat atg act gtt aag ttc   1248
Asp Thr Asn Arg Tyr Asn Val Leu Thr Ala Asp Met Thr Val Lys Phe
                405                 410                 415
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                20                  25                  30


Thr Thr Gly Ala Val His Val Gly Ala Val Gly Gly Glu Leu Ile Ser
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    50   55   60

Lys Ala Gly Ser Asn Ala Pro Leu Leu Thr Ile Gly Gly Thr Leu Glu
65   70   75   80

Ala Asp Ala Gln Met Asn Arg Asn Gly Asn Val Gly Ser Gly Ser Thr
                85   90   95

Ser Gly Asp Pro Ser Gly Leu Asn Tyr Thr Asp Gly Thr Ser Ser Ser
            100   105   110

Ala Phe Tyr Leu Asp Thr Ala Arg Ile Asp Ile Leu Ala His Val Asn
        115   120   125

Asp Trp Val Asn Gly Glu Ile Ser Tyr Asp Leu Asn Gly Asp Ser Gly
    130   135   140

Leu His Thr Gly Ser Leu Leu Val Gly Asn Leu Asn Gln Leu Pro Val
145   150   155   160

Tyr Gly Gln Ile Gly Lys Phe Tyr Pro Asp Ala Gly Leu Phe Glu Leu
                165   170   175

Ala Ser Asp Asp Val Tyr Ser Ser Ser Leu Val Lys Arg Tyr Phe Arg
            180   185   190

Pro Asp Ala Gln Asn Gly Ala Ser Val Gly Phe Tyr Lys Ala Gly Leu
            195   200   205

His Thr Ser Leu Thr Ala Phe Lys Thr Ser Ala Pro Gln Ala Asn Ala
    210   215   220

Ala Asn Tyr Asn Gln Ala Thr Ser Asp Trp Ser Ala Gln Ala Asp Tyr
225   230   235   240

Thr Phe Asn Ala Gly Gln Val Asn Ala Thr Ile Gly Ala Gly Tyr Leu
                245   250   255

Ser Asn Met Val Asn Thr Asn Asp Ser Phe Thr Ala Thr Gly Ala Gly
            260   265   270

8

Thr Gly Thr Gln Lys Asp Arg Leu Pro Met Ala Asn Val Ser Ala Lys
    275   280   285

Ile Gly Phe Gly Pro Phe Glu Ala Leu Ala Thr Tyr Ala Gln Thr Leu
    290   295   300

Lys Gly Leu Ala Asn Thr Thr Gly Gly Thr Thr Lys Leu Lys Ala Phe
305   310   315   320

Asp Leu Glu Gly Ala Tyr His Phe Gln Ala Val Lys Pro Met Thr Val
                325   330   335

Met Leu Gly Tyr Ser Arg Thr Tyr Gly Phe Asp Lys Val Gly Pro Val
                340   345   350

Asp Gln Phe Ile Asp Gly Asn Thr Ala Ile Thr Ile Asn Asn Lys Lys
                355   360   365

Asp Gln Trp Leu Leu Gly Val Asn Ser Glu Val Phe Lys Asn Thr Thr
    370   375   380

Val Gly Leu Glu Tyr Ala Arg Val Gly Gln Leu Asp Ser Thr Gly Thr
385   390   395   400

Asp Thr Asn Arg Tyr Asn Val Leu Thr Ala Asp Met Thr Val Lys Phe
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